

Expression of Blood Group Antigens by Cultured Epidermal Cells

To the Editor:

Referring to the paper by Thompson et al [1] we may confirm that blood group antigens are expressed on human cultured epidermis.

To identify the blood group substances on human epidermal cells we used indirect immunofluorescence with monoclonal antibodies to A and B substances (CNTS, Paris, France). On confluent and multilayered epidermal cell cultures we found that blood group antigens were expressed by few cells from the suprabasal intermediate layers. As compared with the pattern noted on normal human epidermis, i.e., strong membrane and granular cytoplasmic staining of the granular layer, this may likely be related to the incomplete in vitro differentiation of the epithelium, as also evidenced by the study of keratins and the expression of MHC class I antigens [2,3].

These human epidermal cell cultures were used as epidermal allografts onto unrelated patients with dermal wounds [4,5]. Skin biopsies were performed after grafting to identify the keratinocytes present at the grafted area in case of blood group mismatching between the donor and the recipient. When epidermal cultures were obtained from an A or B donor and grafted onto an O recipient, few cells presented a membrane and cytoplasmic granular staining into the granular cell layer using antibodies to the blood group antigen of the donor from whom the cells were derived. Thus, the epidermal cells present at the grafted site were identified with the cultured epidermis.

We did not observe any clinical or histologic signs of rejection of the grafts during the follow-up. As suggested by in vitro studies, long-term survival of human epidermal allografts may be related to the absence of class II MHC antigen-bearing cells in epidermal cultures [6].

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REFERENCES

1. Thompson C, Rose B, Fletcher A, Harbour C, Cossart Y: Expression of blood group antigens by cultured human epidermal cells. *J Invest Dermatol* 86:394-398, 1986
2. Mauduit G, Faure M, Demidem A, Kanitakis J, Thivolet J: Cultured

human epidermis used as allografts: studies on their differentiation in vivo (abstr). *J Invest Dermatol* 87:154, 1986

3. Gielen V, Mauduit G, Faure M, Demidem A, Thivolet J, Vincent C, Revillard J-P: Class I antigens in cultured human epidermis before and after grafting (abstr). *J Invest Dermatol* 87:140, 1986
4. Thivolet J, Faure M, Demidem A, Mauduit G: Cultured human epidermal allografts are not rejected for a long period. *Arch Dermatol Res* 278: 252-254, 1986
5. Thivolet J, Faure M, Demidem A, Mauduit G: Long term survival and immunological tolerance of human epidermal allografts produced in culture. *Transplantation* 42:274-280, 1986
6. Faure M, Mauduit G, Demidem A, Thivolet J: Langerhans cell free cultured epidermis used as permanent skin allografts in humans (abstr). *J Invest Dermatol* 86:474, 1986

REPLY

We refer to the letter of Mauduit et al, who report that they have also detected blood group antigens in epidermal cell cultures, although apparently in minor quantities, in contrast to the strong antigenicity we observed. As stated by these correspondents, final differentiation of keratinocytes does not seem to occur in vitro, and hence blood group antigen expression may be impaired. It is widely recognized that epithelial differentiation in vitro may be manipulated by alterations of the medium Ca^{++} concentration as well as by the addition of growth factors such as EGF. It is our experience that differentiation is also influenced by the particular culture system employed: epidermal cultures produced using a 3T3 feeder layer are less well stratified than those grown from explants. The presence of small amounts of dermis trapped within the explants may alter the pattern of epidermal differentiation via the mediation of as yet undefined factors. For this reason explant cultures may produce larger amounts of blood group antigen.

The report of the successful grafting of cultured epidermis across blood group barriers is extremely interesting, and indicates that although these antigens persist both in vitro and in the in vivo grafts they remain antigenically nonreactive, possibly because of their location in the upper layers of the epidermis.

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